1. NAME OF PROPERTY

Historic Name: Geo. M. Verity

Other Name/Site Number: Towboat Geo. M. Verity, ex S.S Thorpe

2. LOCATION

Street & Number: Keokuk River Museum, Victory Park Not for publication: __

City/Town: Keokuk Vicinity: __

State: Iowa County: Lee Code: 111 Zip Code: 52632

3. CLASSIFICATION

Ownership of Property		Category of Property	
Private:	___	Building(s):	___
Public-Local:	X	District:	___
Public-State:	___	Site:	___
Public-Federal:	__	Structure:	X
		Object:	___

Number of Resources within Property

Contributing	Noncontributing
___	___ buildings
___	___ sites
1	___ structures
___	___ objects
1	___ Total

Number of Contributing Resources Previously Listed in the National Register: 0

Name of Related Multiple Property Listing:

4. STATE/FEDERAL AGENCY CERTIFICATION

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this ____ nomination ____ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property ____ meets ____ does not meet the National Register Criteria.

Signature of Certifying Official Date

State or Federal Agency and Bureau

In my opinion, the property ____ meets ____ does not meet the National Register criteria.

Signature of Commenting or Other Official Date

State or Federal Agency and Bureau

5. NATIONAL PARK SERVICE CERTIFICATION

I hereby certify that this property is:

___ Entered in the National Register
___ Determined eligible for the National Register
___ Determined not eligible for the National Register
___ Removed from the National Register
___ Other (explain):

Signature of Keeper Date of Action

6. FUNCTION OR USE

Historic: Transportation Sub: Water-related
Industry/Processing/ Extraction

Current: Recreation and Culture Sub: Museum

7. DESCRIPTION

Architectural Classification: N/A

Materials:

Foundation: N/A
Walls: N/A
Roof: N/A
Other: N/A

Describe Present and Historic Physical Appearance.

Geo. M. Verity, official number 226471, is a riveted-steel, high-efficiency, steam-powered, sternwheel-propelled towboat. The superstructure is built of steel and wood. Geo. M. Verity's large helical sternwheel is propelled by a tandem-compound, surface condensing, reciprocating steam engine. She is now a museum vessel in a dry berth on the Mississippi riverfront at Keokuk, Iowa.

Geo. M. Verity, (Verity) was built as S.S. Thorpe, in 1927 by the Dubuque Boat and Boiler Works of Dubuque, Iowa. She is one of only three remaining steam propelled, Western Rivers towboats and is the only remaining vessel of the fleet that began the Federal Barge Line. Verity reflects some differences in appearance because of changes made during her operational life to improve performance and habitability. [1]

Hull

Verity was built double-riveted of steel for strength. When built she measured 130.1 feet long, with an overall length including sternwheel of 162.5 feet. She was 35.1 feet wide when built, but was widened to 40.6 feet in beam, late in her service life. Her depth of hold is 5.1 feet. [2] The hull was fitted with a full scow form bow, a flat bottom with no external keel, and a tucked-up run to the stern with rounded indentations to clear the rudders. The bow is fitted with a skeg on the centerline to help give resistance to sideways motion and aid in steering. Internally, Verity is divided into several watertight compartments by athwartships bulkheads.

Verity's hull is supported by an internal truss system, which in effect makes the hull one large girder. Two side keelsons, parallel to the center keelson, support the deck. The buoyancy of the entire hull supports the localized weight of heavy fittings, such as the engines and boilers. This experimental internal truss system was much more convenient than the traditional external hogging truss system of Western Rivers steamboats and replaced it by 1930. [3]

Towboats also possess a fitting not found on other river types. Their flat bows are usually fitted with heavily reinforced vertical stanchions called towing knees. Verity has four towing knees across her bow. All knees have stairs and a railing to aid in climbing to the decks of barges in the tow string.

Superstructure

The superstructure of Verity consists of three decks: the main, on which the propelling machinery is located; the boiler deck above the boilers with staterooms, mess, and galley; the Texas which holds quarters for the crew and supports the pilothouse half a deck higher. Verity was built with a predominately closed main deck except for the engine room aft. The superstructure is built of steel to the boiler deck and of steel reinforced wood above.

Main Deck

The main deck is squared off forward with the towing knees at the forward edge and a steam-powered capstan set in the middle of the deck behind the towing knees. Two more smaller capstans are mounted on the centerline inside the boiler room. Four large sliding doors, on the port and starboard sides of the superstructure, give access to the interior. The superstructure is wider through the engine room space to the stern.

Boilers

The boiler room is forward in the hull. The boiler is of the very advanced lightweight, cross-drum, watertube Foster-Wheeler type. The boiler was fired from the front with bunker C heavy fuel oil. The fire passed between tubes filled with water to the back of the boiler and returned between other water tubes to the uptake. Exhaust gasses exited the boat through smokestacks to port and starboard. A Foster Marine Economiser was fitted to the boiler. Steam produced was extracted from the overhead steam drum and passed through the main steam line overhead to the engine room. The entire

assembly is covered by a sheet steel jacket over refractory materials. The current boiler is the original 1927 boiler fitted to Verity. It is 11-feet long and rated for 260 pounds pressure per square inch. The boiler burned an average of 137 gallons of oil per hour. [4]

Two types of instruments indicate the level of water in the boiler. The oldest form are a vertical row of three small spigots, called test cocks, set into the back of the boiler. The water level is found by opening each one briefly to see whether steam or water comes out. The modern type of water level indicator, called a sight glass, is a pipe, open at the top and bottom to the interior of the boiler. The sight glass is a heavy glass window set into the pipe through which the water level can be viewed. The redundancy of water level indicators assures that the water will not be allowed to drop low enough to damage the boiler. [5]

The passageways on deck outboard of the boiler room are wide and have no rails. Crew members could walk from the bow aft to the engine room by way of the passageways to port and starboard. In the engine room they could ascend to the deck above on a stairway over the port engine.

Engine Room

The engine room occupies the entire width of the stern and contains the engines, rudders, auxiliary machinery, heads, and engine controls. The engines are mounted to port and starboard in the engine room on massive structural members called cylinder timbers. The cylinder timbers support the cylinders and crossheads at their inboard ends and the paddlewheel shaft at the after end.

Western Rivers steamboat engines showed a great deal of variety in design from one builder to another. The most popular types of engine used variable cut-off steam valves. The engines of Verity were built by the Nordberg Machine Works of Milwaukee, Wisconsin. They are tandem-compound condensing engines. The valve gear operates to convert the motion of the engine to linear to-and-fro motion. This motion operates the valve gear which admits steam to the cylinders.

In tandem-compound engines the steam was expanded twice. Two cylinders were mounted in line and pushed a single piston rod. Steam entered the smaller, high-pressure cylinder to the rear first and then expanded again in the larger, low-pressure cylinder nearer the stern. Each piston pushed a heavy crosshead along a slide attached atop the cylinder timbers. The crosshead pushed and pulled the pitman (an overgrown connecting rod) which turned the crank and thus the paddlewheel. The high-pressure cylinder is 15-inches in diameter and the low-pressure cylinder is 30-inches in diameter. Both tandem engines have a 6 1/2-foot stroke and developed 1000-horsepower. [6]

The surface condenser is a large cylinder mounted at the after end of the boiler room. It receives the spent steam from the cylinders and saves the hot water for return to the boiler to raise the efficiency of the propulsion plant. Condensers were used in few Western Rivers steamboats because of the abundance of cheap fuel, but in the waning days of steam on the rivers every device that increased efficiency was utilized.

The paddlewheel is the massive construction of steel and wood which propels the boat. The original paddlewheel was of the simple 16 bucket, radial type. It subjected the boat and engines to considerable vibration and strain. The crank, crosshead, and paddle shaft all fractured in one two-year period. In 1945, an experimental paddlewheel was fitted. It was a double helical wheel that used bucket planks with a herringbone pattern rather than planks perpendicular to the water. It is still in place and is the only surviving helical paddlewheel. The wheel is 19 feet in diameter, 22 feet long and has buckets with a dip of 36 inches. Five flanges, holding sixteen arms each, are evenly spaced along the paddleshaft. The arms are all held rigid by iron circles and blocking. Each arm and flange assembly forms one segment of the entire paddlewheel. The ends of the arms on each segment are attached to the paddle bucket planks which push the boat. [7]

A number of small auxiliary steam engines power various pumps and generators. Verity did not use gas or Diesel motors in service. Two steam reciprocating, double-acting, duplex pumps handled all regular pumping duties.

All engine room controls are located on a raised platform in front of and between the engines. A system of bells, connected to the pilothouse, guided the engineer on duty as to what speed and direction (forward or reverse) was desired. Coast Guard regulations required a chief engineer and a striker on duty in the engine room and a fireman in the boiler room when Verity was operated. [8]

The steering is controlled from the pilothouse, but much of the multiple rudder system is located in the engine room. Two systems were used. The preferred system employed a steam steering engine, controlled from the pilothouse, to move the central tiller arm and turn the rudders. This central tiller arm is yoked to two other rudders for additional control in maneuvering. Verity had additional rudders, called monkey rudders, behind the paddlewheel for added control when turning. These were mounted on a frame aft of the wheel and were in the way when the boat was moved as a barge from West Virginia to Iowa. The monkey rudders were cut away and fell to the river bottom where they may still remain. [9]

Second Deck

The deck over the boilers in towboats was used to house the crew. These cabins were of the lightest possible construction. The second deck holds cabins, a kitchen and dining area, and the boat's office. The crew and officers are housed in double and single cabins, with doors opening both to an inside hallway, and to the deck outside. The cabins are cooled by opening small ventilating windows just under the ceiling, and heated by several large coal stoves and the heat radiated by the boilers and engine room. A covered walkway runs around the second deck house from the pilothouse aft to the stern bulkhead.

Carbon-arc searchlights are mounted on tall pylons at the outboard corners of the forward edge of the second deck. A classic steam whistle is mounted at the starboard rear corner of the pilothouse.

Texas Deck

The deck above the boiler deck is called the Texas. Verity had no Texas when built, but one was added over several years. The radio room is forward as is the captain's cabin. Entry to the narrow house is by a number of panel doors along its length. The pilothouse was raised to allow the original radio room to be placed beneath in 1940. In her new operating area the boat did not have to pass beneath low bridges and was built higher for better visibility for the pilots.

Pilothouse

The pilothouse is built of steel, with large sliding windows all around. It is raised above the level of the second deck house to allow the steersman 360 degree visibility. The roof is flat with a very slight crown. The pilothouse is surrounded by sliding windows which can be moved out of the way for clearer visibility. Each side of the pilothouse has a railed steel bridge wing.

Verity had modern steam steering gear that was controlled by levers. The levers are placed on vertical posts near the front of the pilothouse and moved from side to side to steer the boat. Steam steering gear was developed around 1900 and rapidly supplanted the earlier cable and wheel mechanism, which was prone to breakage. The levers in the pilothouse control steam cylinders in the engine room which turn the central rudder by means of a long tiller arm. The other two rudders are yoked to move with the center rudder.

Like most towboats, Verity does not step any masts. She does possess two flagstaffs, one at the front of the second deck, and another at the stern bulkhead. Boiler exhaust travels up from the boiler on two sides and out of the boat through two substantial smokestacks.

Notes

[1]United States Treasury Department, Bureau of Customs, Merchant Vessels of the United States 1952 (Washington, D.C.: Government Printing Office, 1953) p. 207.

[2]United States Department of Commerce, Bureau of Navigation, Merchant Vessels of the United States 1929 (Washington, D.C.: Government Printing Office, 1929) p. 170.

[3]G.E. Bathman of The Casey-Hedges Co., Boiler Department to Steamboat Inspection Service concerning boilers for Upper Mississippi River Barge Line Company, (Typescript on letterhead, December 29, 1926, in files of Keokuk River Museum) and Alan L. Bates, The Western Rivers Steamboat Cyclopoedium (Leonia, New Jersey: Hustle Press, 1968) passim.

[4]Frederick Way, Jr., Way's Packet Directory: 1848-1983 (Athens, Ohio: Ohio University, 1983) p. 222.

[5]Department of Commerce, Steamboat Inspection Service, "Certificate of Inspection For Steam Or Motor Vessel, S.S. Thorpe" (printed form with typed notation, signed W.J. Macdonald, supervising inspector, July 27, 1927)

[6]Reports and Documents upon the subject of The Explosions of Steamboat Boilers (Washington, D.C.: Duff Green, 1833) passim.

[7]"Double Helical Steamboat Paddlewheel" Waterways Journal (St. Louis, Missouri, July 12, 1947) p. 25, and Bates, Steamboat Cyclopoedium, pp. 92-97.

[8]Bates, Steamboat Cyclopoedium, pp. 36-39.

[9]Bates, Steamboat Cyclopoedium, pp. 72-75, and conversation with John Miller, June 12, 1989.

8. STATEMENT OF SIGNIFICANCE

Certifying official has considered the significance of this property in relation to other properties:
Nationally: X Statewide:__ Locally:__

Applicable National Register Criteria: A X B__ C X D__

Criteria Considerations (Exceptions): A__ B__ C__ D__ E__ F__ G__

NHL Criteria: 1, 4

NHL Theme(s): V. Developing the American Economy
3. Transportation and Communication

VI. Expanding Science and Technology
2. Technological Applications

Areas of Significance: Maritime History
Transportation
Engineering
Industry

Period(s) of Significance: 1927-1960

Significant Dates: 1927

Significant Person(s): N/A

Cultural Affiliation: N/A

Architect/Builder: Dubuque Boat and Boiler Works

Historic Contexts: The Maritime History of the United States NHL Study -- Large Vessels

State Significance of Property, and Justify Criteria, Criteria Considerations, and Areas and Periods of Significance Noted Above.

The sternwheel river towboat Geo. M. Verity, is now a museum vessel on the Upper Mississippi River at Keokuk, Iowa. Towboats have been employed moving barges on all the navigable waters of the Western Rivers, and have been an important component of the American transportation system since the 1850s. Few examples of any paddlewheel propelled vessels remain in the United States, and Verity is one of only three steam-powered towboats extant in the United States. [1]

Verity was built in 1927 as S.S. Thorpe, the first of four sister boats designed for use on the Ohio, and Mississippi rivers. River transportation had declined after the Civil War and nearly disappeared during the First World War. Thorpe and her three sisters reopened barge freight service on the upper Mississippi, using modern equipment and management methods. The service was so successful that private investors copied the methods and equipment, building a huge new industry. Thorpe began a second career in 1940 when the American Rolling Mill Company (ARMCO) bought her. The company renamed her Geo. M. Verity for the company's founder and first president. Verity towed barges loaded with coal, and scrap iron on the Ohio and Mississippi rivers and several tributaries. The transportation of raw materials and finished products was vital to the American steel industry, and because of the importance of steel in our industrial expansion, to the growth and well-being of the entire economy.

The preceding statement of significance is based on the more detailed statements that follow.

The Development of Western Rivers Watercraft

The Western Rivers system, composed of the Mississippi, Ohio, Missouri, and other tributary rivers, carried most of the immigrants and freight that settled the Midwest. Starting in the late 1700s, most settlers travelled from the East Coast overland to Pittsburgh, Wheeling, or Redstone and then down the Ohio River to points west. [2] Only a small number traveled north from New Orleans and southern regions using the Mississippi and other rivers flowing from the North.

To reach the new lands of the West, Europeans adapted boat types already in use by Native Americans and on the East Coast. Explorers used birch bark canoes and settlers used larger dugouts to open the West to settlement. As more people moved west, boats with greater capacity were needed, which called for new boat types. A form of enlarged dugout, called a pirogue, was developed first. Pirogues were more capacious than dugouts and were themselves adapted into more useful forms. The first adaptation changed the method of construction, by taking the well-formed hull shape of the pirogue and replacing the hewn multiple-log construction of pirogues with European plank-on-frame construction. [3]

Plank-on-frame construction was also used for another boat type called a bateau. Bateaus had been adapted for frontier use on the eastern seaboard in the early 1700s and were built for use on the Western Rivers later. When more traditional European construction practice was followed with these vessels, they resembled ship's boats but with more substantial timbers. When the best features of pirogues and bateaus were combined, they were given a hull shape that provided little resistance to the water, an external keel to help in steering, and sufficient cargo capacity to pay their way. This new type was called a keelboat. [4]

Keelboats were the most developed form of watercraft on the river and were used for rapid transportation of passengers and high value freight. Keelboats were usually 40-80 feet long and 7-10 feet broad. They possessed a well-modeled form, and could be propelled about 15 miles a day, by either oars at the bow or by poles pushed by the crew walking along a footway at each side. A single steersman stood atop a block at the stern to guide the keelboat using a long steering oar. Some keelboats which sailed an advertised route on a regular schedule came to be known as packets, the deep water term for vessels in such service. [5]

Cheaper transportation was afforded by the use of barges and flatboats. Flatboats were box-shaped variants of the scow hull form used for ferries on shallow Eastern rivers. Flatboats were the cheapest form of transportation on the rivers.

Intended to travel only one way and then be broken up for lumber, flatboats could be built, loaded with household goods, and sailed by the settlers themselves. [6]

Barges occupied the middle range of watercraft between keelboats and flatboats. Though similar in construction to keelboats, early barges were built wider, more robust, and drew more water. Barges, with their deeper draft, transported heavy freight on the deeper rivers. [7]

Development of the Western Rivers Steamboat

Robert Fulton built the steamboat New Orleans at Pittsburgh, Pennsylvania, in 1811, and started a revolution which changed the pattern of commerce on the rivers. She proceeded down the Ohio and Mississippi rivers to her namesake city attracting publicity and attention along the way. The advent of steam propulsion on the Western Rivers revolutionized river transportation. Steamboats would provide convenient, inexpensive transportation and greatly facilitate the opening of the continent to settlement. New Orleans, and the boats which were built on her pattern, were powered versions of canal boats. Their long, narrow, deep hulls were better suited to deep eastern rivers than the shallow Mississippi, but were needed to support heavy steam machinery. Another sort of boat was required, but several design problems had to be overcome before steamboats could be a success on the Western Rivers. [8]

To navigate on the shallow rivers of the West, steamboat hulls and machinery had to be made as light as possible. Machinery weight problems were solved first. A lightweight, high-pressure engine was employed to propel a small boat called Comet in 1813. The powerplant was further refined in 1816 by Henry Shreve, who put the boilers on deck and designed anew type of engine to distribute machinery weights out over a large area of hull. Shreve's new engine design used a direct-acting, horizontal, high-pressure engine to drive the paddlewheel propeller. The second design problem was overcome through the years. Eventually, lightweight hull construction gradually replaced earlier robust "canal boat" construction. Abroad, shallow- draft, hull form, using a truss-rod system rather than heavy wooden beams, was developed over time.

To succeed in business, these lightly built boats had to carry a large amount of freight and many passengers. In answer to this requirement, sponsons were built over each side of the hull to extend the deck area and the superstructure was extended several decks above the boiler deck to support passenger cabins.

All of the essential elements of the Western Rivers steamboat were present by 1825. Broad, shallow-draft, vessels with boilers and engines on deck, sidewheels or sternwheels for propulsion, and cabins built on lightweight decks above the freight and machinery-laden maindeck, soon appeared on every tributary of the Mississippi. The ease and economy of this service caused the value of goods reaching New Orleans to double every ten years from 1820 to 1860. [9]

One feature of cardinal concern in the development of Western Rivers steamboats was safety. Early boats were particularly susceptible to boiler explosions, fires, and sinkings caused by hitting snags. Extraordinary dangers included being damaged in floods, tornadoes, and ice gorges. The lifetime of a steamboat in the 1840s and 1850s was estimated to be below five years. This situation changed very slowly.

Government intervention forced builders and operators of steamboats to become more conscious of safety considerations in a way that commercial motivations could not. In 1838, Congress responded to the need for increased safety aboard steamboats when it passed an act requiring the inspection of steamboats. In 1851, six steamboat disasters took more than 700 lives and caused Congress to tighten these safety regulations. The Steamboat Inspection Act of 1852 set standards for both boats and operators, and created a system of Federal inspection to oversee them. [10]

Many hazards to navigation did not deter business. New boats replaced those lost to various causes. A substantial salvage business grew up in consequence; parts produced for one steamboat might be reused on a succession of later boats.

As time progressed, steamboat designs diversified to meet the needs of various trades and routes. Various features

advantageous to particular trades or routes, were accentuated in vessels built for them. Passenger vessels required high speed and high-class accommodations. Ferries called for wide stable hulls. Package freighters required dependable engines and robust construction as they carried heavy cargo on deck or in barges alongside. In some services speed became paramount, even surpassing safety concerns. Faster vessels required fine lines, powerful engines, and multiple boilers to supply plenty of steam. [11]

Shallow tributary rivers such as the Missouri and the upper regions of other rivers required boats with exceptionally shoal draft. Bertrand, sunk in 1865 on the Missouri River, drew only 18 inches when light. To operate in such shallow water steamboats had to sacrifice all unnecessary weight and be satisfied with minimal superstructures. [12]

By 1880, though a depression in river trade had hurt steamboat companies, riverboat technology continued to advance. Several distinct types of steamboats had been developed for work on the Western Rivers. Passengers were carried on riverboats of any kind from time to time but several types were particularly adapted for passenger service. The most elaborate of these were saloon or palace steamers providing luxury passenger transportation in elegant cabins. Such boats usually ran on schedule, and often carried mail to designated ports. These services duplicated those of ocean-going packet companies; these boats were aptly termed packets. [13]

Other passenger vessels were adapted for short day excursions carrying groups and charters to nearby scenic areas and for cruises to nowhere. These excursion boats were usually large sidewheelers operating from large port towns. Smaller boats also made occasional trips on the rivers "tramping" for charters.

The Development of Towboat

More mundane sisters to the packets operated carrying passengers and cargo, wherever it could be found. Such non-scheduled steamboats often pushed one or more barges to increase cargo capacity or to decrease draft in periods of low water. Coal was carried from the 1850s and later salt, hay, iron ore, and grain were carried. By 1860, a system of towing barges lashed alongside and ahead of the towboat was developed which allowed greater control than towing on a hawser. This type of service favored sternwheel propelled boats over sidewheelers and promoted other improvements as well. Towboats had become a distinct type by 1870.

Barges also developed in size, construction, and began to be built in standard sizes. Early barges were of two general types. The more common type was a long narrow scow hull, built of planks and used on one-way trips downriver carrying coal. This type was generally developed from the flatboat. When they were unloaded they were broken up and sold as lumber. The other type of barge was used for voyages both up- and downstream. These were usually greatly enlarged versions of the barges of the 1820s called "model" barges, for their finely modeled ends. Towboats were moving barges carrying more than 19 million tons of products per year by 1889.

Towboats were designed to act as floating engines to propel barges. Only the barge need be detained while loading or unloading cargo, and not the expensive towboat. Nearly all towboats had, and have, straight sides and ends to ease tying off to a string of barges. Strings of up to 60 barges were pushed on occasion but today 15 barges is the more usual number, because of the limited size of river locks requiring breaking tows into several pieces. [14]

Federal Barge Lines

Following the turn of the 20th century, the packet and barge freight system failed to compete with railroads, and lost even the bulk cargoes formerly carried by river. Freight tonnage on the Upper Mississippi fell below 1 million tons per year in 1916 and hovered around 750,000 tons until 1931. A number of factors had led to this decline. Log rafts and raft towboats had disappeared and river cargo service had shifted to short-haul instead of long distance hauling. The First World War made crewmen scarce and helped to make the railroads stronger. [15]

The First World War also caused word to be spread of the need for several forms of river improvement. River navigation

hazards needed removal, cargo terminals needed to be built, barge and towboat design needed updating, and cargo shippers needed to be enticed back to shipping by water. In spite of these problems, the heavy transportation needs of wartime could not be met by railroads and river transport took off some of the pressure. In 1917, the United States Shipping Board allocated $3,160,000 to the Emergency Fleet Corporation to build and operate barges and towboats on the Upper Mississippi. Federal control was augmented by the Federal Control Act of 1918. The U.S. Railroad Administration formed the Committee on Inland Waterways to oversee the work. All floating equipment on the Mississippi and Warrior River systems was commandeered and $12 million was appropriated for new construction. Service was provided primarily on the Lower Mississippi. [16]

New floating equipment was designed by prominent naval architects, and built by boat yards known for high-quality work. Modern terminal facilities were constructed to handle bulk and package freight. A special rate system was put into place to reflect the lower cost of river transportation in comparison with railroads. In spite of their innovative approach, the Railroad Administration lost money on river services and in 1920 the Federal Barge Fleet was transferred to the War Department. [17]

The name was changed to the Inland and Coastwise Waterways Service and the experiment continued. The Waterways Service lost less money than the Railroad Administration and in 1924 was modified yet again to allow even more economical operation in a less restrictive environment. The government transferred $5 million worth of floating equipment to provide the capital stock for the new Inland Waterways Corporation. The Corporation continued earlier government operations on the Lower Mississippi and Warrior rivers and sought to demonstrate the feasibility of river transportation to shippers and to open new routes, try new methods, and develop new equipment. [18]

A Minneapolis-St. Paul group formed the Upper Mississippi Barge Line Company in 1927 to seek extension of the Inland Waterways Service to the upper river. A fleet of towboats and barges to be delivered in 1927, was ordered by the Upper Mississippi Barge Line. In 1926, the Inland Waterways Corporation began operations on the upper river when it took over operation of the River Transit Company. The next year it leased the Upper Mississippi Barge Line fleet when it was completed. [19]

The Dubuque Boat and Boiler Works of Dubuque, Iowa, built the four towboats designed to reopen Upper Mississippi River service. Three of the identical towboats were built for the Upper Mississippi Barge Line and one was built for the Inland Waterways Corporation. The sisters were high-efficiency, steam-propelled, stern-wheel towboats. The boats were named C.C. Webber, S.S. Thorpe, John W. Weeks, and General Ashburn after officers in the companies. S.S Thorpe was later to become the present Geo. M. Verity. [20]

When the four upper river towboats were built the river transportation industry was nearly dead. The Corporation experimented with designs of towboats and barges, terminals, and propulsion methods just as the Railroad Administration had. The best designs from deepwater and foreign service were adapted for use on the Western Rivers. Consequently, many of .the innovations of the Federal Barge Line were extremely influential in setting the pattern for future river transportation. The engines and boilers of these boats were arguably the most efficient ever applied to a sternwheel steamboat. Twenty years later, the engines of the famous Delta Queen were praised by comparison to those of Geo. M. Verity, "and that was the ultra-ultra." [21]

The inauguration of modern river transportation began with a celebrated tow of three 500-ton barges of sugar and other freight from St. Louis upriver to Minneapolis. The last through trip had been made in 1915. S.S. Thorpe, the first of the four new towboats, made the trip in August, 1927, followed along by newspaper reports of her progress. A fourth barge was added to the tow string at Quincy, Illinois. Her arrival set off a city celebration and the proclamation of "Minneapolis-to-Gulf Day." [22]

The services of the Upper Mississippi River Barge Line led the way for greater use of the river. S.S. Thorpe helped expand the service capabilities by pushing larger tows than previously. In 1929 she was the first to push 8 barges upriver, they were loaded with the equivalent to 200 railroad boxcars of freight. Thorpe operated between Dubuque and

Minneapolis at first, later travelling to 8t. Louis and even to New Orleans. [23]

Larger tows required changes in towboats, so S.S. Thorpe and her three sternwheel sisters were modified during the winter of 1929-30. The pilothouse was raised a deck and the old pilothouse extended back for use as a radio room. Bridge wings were built on each side and the searchlights were raised 7 1/2 feet. [24]

S.S. Thorpe had one major accident during her career. While bound downriver May 9, 1938, from Minneapolis with two barges in tow, she was caught by powerful flood stage currents and dashed against the riverbank. The sternwheel was driven ashore, the barges torn loose, and the head of the towboat slammed into a pier of the Washington Street bridge. The boat filled with water to the boiler deck while the crew scrambled ashore. Thorpe was raised on June 17, discovered to be only lightly damaged, and repaired at Dubuque. [25]

By the late 1930s, changes in technology, brought about largely by the success of other advanced vessel designs of Federal Barge Lines, made Thorpe relatively expensive to run. The boat was sold in 1940 to the American Rolling Mills Company (ARMCO) for use on the Ohio River. ARMCO was able to operate the boat cheaply because she burned coal which was to be her chief cargo.

The Federal Barge Lines experiment was successful in restarting the river transportation industry. By 1938, the tonnage of cargoes carried by the Western Rivers, that had totalled only about 750,000 tons in the 1920s, had grown to 2,767,210 tons. S.S. Thorpe and her sisters played an important part in the success of the undertaking. [26]

Second Career

The iron and steel industry in Pennsylvania required large quantities of iron and coal or coke for production. In the late 1800s, roughly twice the weight of coal as iron was required to make steel. Thus it was cheapest to bring iron ore near to the coal fields for production into steel. The switch from coal to the more economical coke, allowed these locations to be reversed. Coke is liable to damage in transport so coal was shipped to the coke ovens and there converted into coke. It was 1890 before coke producing companies started using barges to transport coal to the ovens. In that year, Jones and Laughlin bought the Vesta coal mines near the Monongahela River and used barges to transport coal to their steel plant and coke ovens at Pittsburgh.
Other steelmakers slowly followed suit, so that by the First World War, most used barges to haul coal to the steel mills. Barges moved by towboats had been, and continue to be, the cheapest means to carry such bulk cargoes. [27]

The towboat S.S. Thorpe was sold to the American Rolling Mill Co. of Middletown, Ohio in July, 1940. Thorpe traveled down the Mississippi and up the Ohio under her own power to the Huntington, West Virginia, terminal of ARMCO. The Texas was lengthened about 12 feet, and the boat repainted in the company colors. A new name was bestowed on the boat as well. Geo. M. Verity was named in honor of the founder of ARMCO.

Verity operated mainly between Huntington and Cincinnati. She pushed ten barges in pool water between locks and 16 in the open river. Later service extended up to Harewood at the head of the Kanawha River for coal and down to New Orleans for scrap iron.

The boat had occasional misfortunes that required minor repairs. The paddlewheel shaft broke and required replacement in 1941; the starboard crosshead and the port crank broke in 1942. Afire in 1945, burnt out several of the starboard cabins but the damage was repaired in under two weeks.

In 1945, Verity was widened 5 feet by the addition of 2 1/2-foot strips to the edge of the hull. A skeg was added to the bow to assist in steering and the Texas was extended back to near the stern. The old radial paddlewheel was replaced with a helical paddlewheel which lessened vibration and increased efficiency. [28]

Verity was a happy boat. Her crew stayed aboard for years and loved the old steamer. Her Chief Engineer said "...Never

did I work for so fine a company as ARMCO, nor on any nicer boat than Verity. There was never a sadder crew than we were on our last trip, and when she blew her whistle for the last time upon arriving at Huntington on April 20, 1960, I'm sure there wasn't a dry eye aboard." [29]

American Rolling Mills discontinued river operations in favor of railroads in 1960 and advertised Geo. M. Verity for sale. A group of interested citizens from Keokuk, Iowa, heard of the upcoming sale and approached ARMCO about the idea of making Verity a river museum in Keokuk. ARMCO sold Verity to the city of Keokuk for one dollar. American Commercial Barge Line of St. Louis and the Sioux City-New Orleans Barge Line towed Verity to Keokuk for one dollar.

The museum had a dry berth trench dug as spring flood stage approached. The berth was completed just in time and Verity was pushed into her permanent home on April 4, 1961, as the flood stage crested. The trench was sealed, the water pumped out and Geo. M. Verity came to rest. The Keokuk River Museum was dedicated June 2, 1962. [30]

Geo. M. Verity plays an important part in the cultural, economic, technological, and historical heritage of the Western Rivers System. Verity is also important; as the prototype vessel for the commercial reopening of the Upper Mississippi, for her part in the steel industry, and as the sole remaining example of her type, which played an important part in the industrial expansion of the United States, and was imitated and used on all the waters of the Western Rivers.

Notes

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[2]Francis S. Philbrick, The Rise of the West: 1754-1860 (New York: Harper & Row, Publishers, 1965) pp. 312-315.

[3]Leland D. Baldwin, The Keelboat Age on Western Waters (Pittsburgh, Pennsylvania: University of Pittsburgh Press, 1980) p. 41.

[4]Baldwin, Op. cit., pp. 42-44 and pp. 50- 51.

[5]Ibid., pp. 175-177.

[6]Philbrick, Op. cit., pp. 313-314.

[7]Baldwin, Op. cit., pp. 44-46.

[8]Jean Baptiste Marestier, Memoir on Steamboats of the United States of America (Mystic, Connecticut: The Marine Historical Association, Inc. 1957) pp. 1-19, pp. 54-57.

[9]Charles Henry Ambler, A History of Transportation in the Ohio Valley (Reprint of 1931 edition, Westport, Connecticut: Greenwood Press, 1970) pp. 119-139, and Archer B. Hulbert, The Paths of Inland Commerce (New Haven: Yale University Press, 1920) pp. 175-195.

[10]"Preventive Safety," Commandant's Bulletin (Washington, D.C.: U.S. Coast Guard, Aug. 4, 1988) p. 32.

[11]John H. Morrison, History of American Steam Navigation (New York: Stephen Daye Press, 1958) pp. 207-209, and Alan L. Bates, The Western Rivers Steamboat Cyclopoedium (Leonia, New Jersey: Hustle Press, 1968) passim.

[12]Jerome E. Petsche, The Steamboat Bertrand: History, Excavation, and Architecture (Washington, D.C.: National Park Service, Department of the Interior, 1974) pp. 1-5.

[13]Leland D. Baldwin, The Keelboat Age on Western Waters (Reprint of 1941 edition, Pittsburgh, Pennsylvania: University of Pittsburgh Press, 1980) pp. 175-177.

[14]Bates, Op.cit., pp. 99-107, and The Ohio Historical Society, "W.P. Snyder, Jr., Marietta," (Pamphlet, Columbus, Ohio: Ohio Historical Society, N.D.)

[15]Ronald D. Tweet, History of Transportation on the Upper Mississippi & Illinois Rivers (Fort Belvoir, Virginia: National Waterways Study, U.S. Army Engineer Water Resources Support Center, 1983) p. 75.

[16]Ibid., pp. 75-79.

[17]M. Von Pagenhardt, "Revival of Mississippi River Traffic" International Marine Engineering (February, 1919) pp. 81-82, and "Large Programme of River and Canal Vessel Construction Now Under Way" International Marine Engineering (October, 1919) pp. 670-678.

[18]Michael C. Robinson, "The Federal Barge Fleet: An Analysis of the Inland Waterways Corporation, 1924-1939" in National Waterways Roundtable Papers: Proceedings on the History and Evolution of U.S. Waterways and Ports (Fort Belvoir, Virginia: National Waterways Study, U.S. Army Engineer Water Resources Support Center, 1980) pp. 149-150, and Tweet, Op. cit. pp. 78-79.

[19]Tweet, Ibid. p. 79.

[20]David Tschiggfrie, The George M. Verity Story (Keokuk, Iowa: Keokuk River Museum, 1969) p. 9.

[21]Frederick Way, Jr., The Saga of the Delta Queen (Cincinnati, Ohio: Picture Marine Publishing Company, 1951) p. 107.

[22]Tschiggfrie, Op. cit. pp. 11-12, and Tweet, Op. cit. p. 79.

[23]Tschiggfrie, Ibid. pp. 14-15.

[24]Ibid. p. 17 .

[25]Ibid. p. 20.

[26]Major General T. Q. Ashburn, Annual Report of the Inland Waterways Corporation (Washington, D.C.: Government Printing Office, 1939) p. 1.

[27]Kenneth Warren, The American Steel Industry: 1850-1970 (Oxford: Clarendon Press, 1973) pp. 46-49.

[28]Ray Gill, "My Twenty Years As Chief Engineer of Str. Geo. M. Verity" (Keokuk, Iowa, Typescript prepared for Keokuk River Museum, ND) p. 3, and Tschiggfrie, Op. cit. pp. 22-23.

[29]Gill, Ibid. p. 5.

[30]Tschiggfrie, Op. cit. pp. 23-25.

9. MAJOR BIBLIOGRAPHICAL REFERENCES

Previous documentation on file (NPS):

__ Preliminary Determination of Individual Listing (36 CFR 67) has been requested.
__ Previously Listed in the National Register.
__ Previously Determined Eligible by the National Register.
__ Designated a National Historic Landmark.
__ Recorded by Historic American Buildings Survey: #
__ Recorded by Historic American Engineering Record: #

Primary Location of Additional Data:

__ State Historic Preservation Office
__ Other State Agency
__ Federal Agency
__ Local Government
__ University
__ Other (Specify Repository):

10. GEOGRAPHICAL DATA

Acreage of Property:

UTM References:	**Zone**	**Easting**	**Northing**
	15	638130	4472460

Verbal Boundary Description:

All that area encompassed within the extreme length, beam, and draft of the vessel.

Boundary Justification:

The boundary incorporates the entire area of the vessel.

11. FORM PREPARED BY

Name/Title: Kevin J. Foster/Historian

Address: National Park Service (418)
P.O. Box 37127
Washington, D.C. 20013-7127

Telephone: (202) 343-9508

Date: July 10, 1989

Edited by:

Telephone:

NATIONAL HISTORIC LANDMARKS SURVEY
Designated December 20, 1989

The format of this nomination has been updated to reflect the current standard for National Historic Landmark nominations. Within Section 8, NHL criteria and theme(s) have been applied. For some nominations (prior to the adoption of a separate NHL form), information on function or use – Section 6 – was added. Otherwise no information in the nomination was altered, added or deleted.